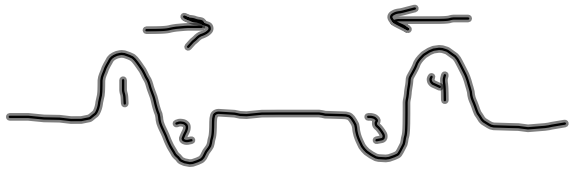
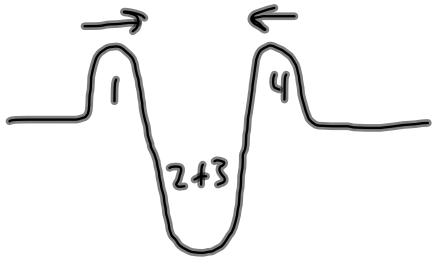
1)



assume all wave pulses have same width and amplitude

2)



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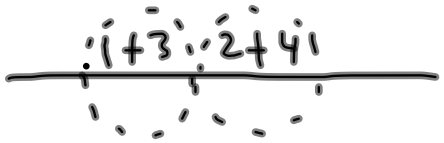

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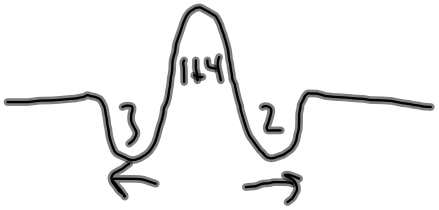

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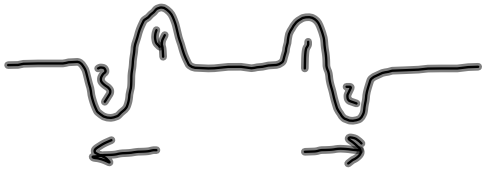
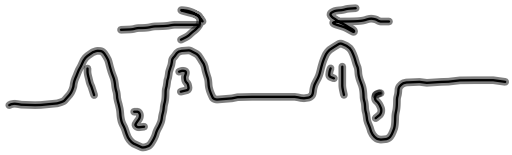


1)



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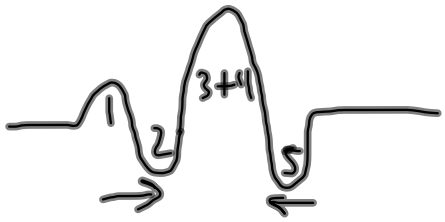

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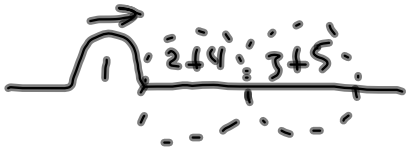

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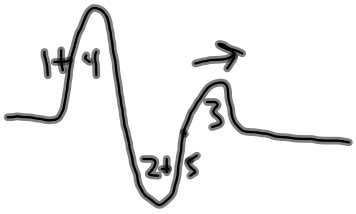

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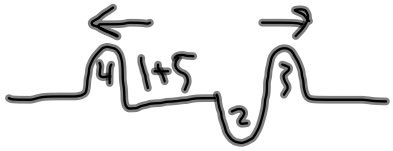

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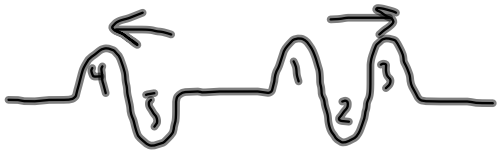
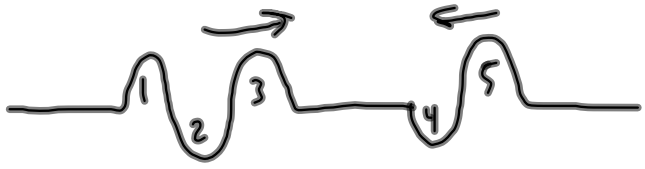
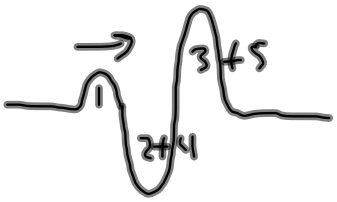
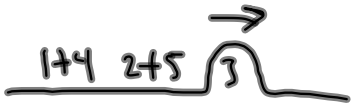


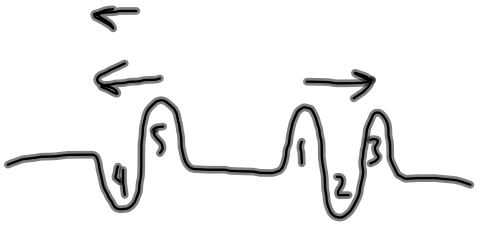
1) 

2) 

3) 

4) 

5) 

6) 

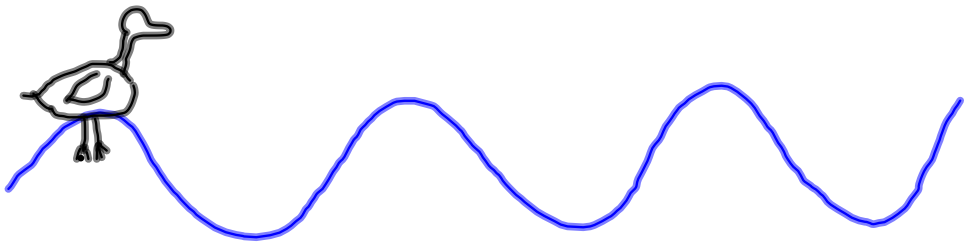
The piano string tuned to middle C vibrates with a frequency of 264 Hz. Assuming the speed of sound in air is 343 m/s, find the wavelength of the sound waves produced by the string.

$$v = \lambda f$$

$$\lambda = \frac{v}{f} = \frac{343\ m/s}{264\ Hz} = 1.3\ m$$

$$\left(\frac{1}{s}\right)$$

As waves pass by a duck floating on a lake, the duck bobs up and down but remains essentially in one place. Explain why the duck is not carried along by the wave motion.



A wave of amplitude of 0.30 m interferes with a second wave of amplitude 0.20 m. What is the largest resultant displacement that may occur? What is the smallest resultant displacement that may occur?

Largest → Constructive

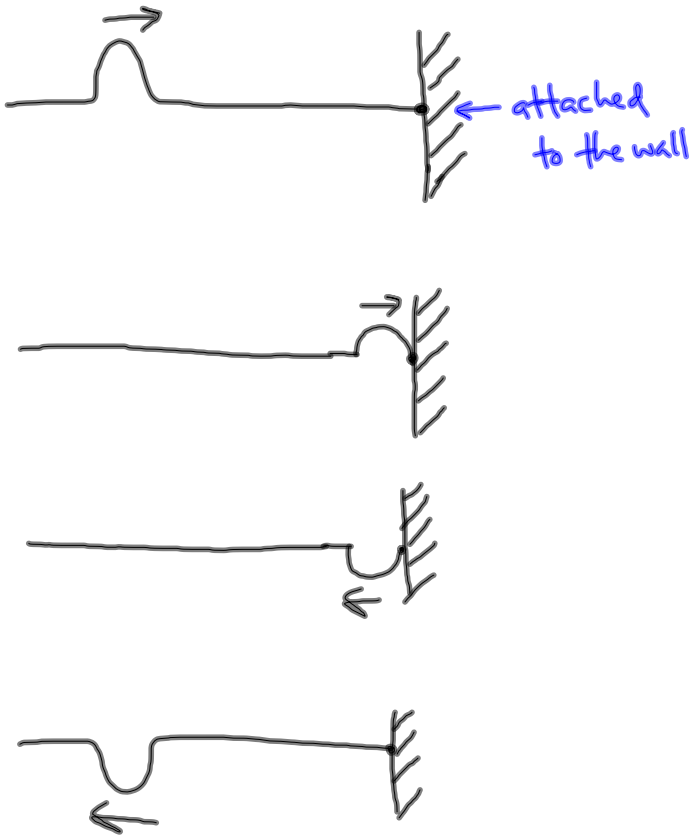
.3 m + .2 m = .5 m

Smallest → Destructive

.3 m - .2 m = .1 m

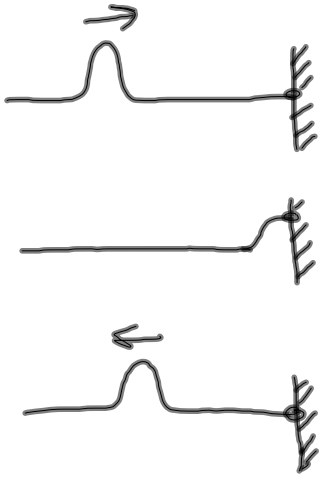
Reflections at a Boundary:

- Fixed end



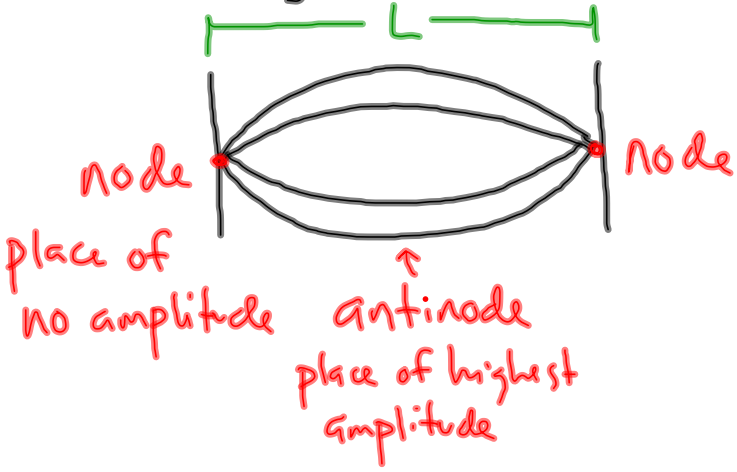
Wave pulse changes direction

- Free end



Wave stays in the same direction

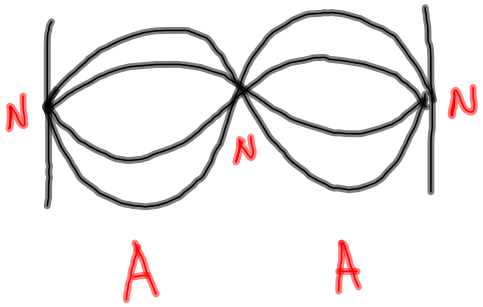
Standing Waves:



fundamental frequency

f_1

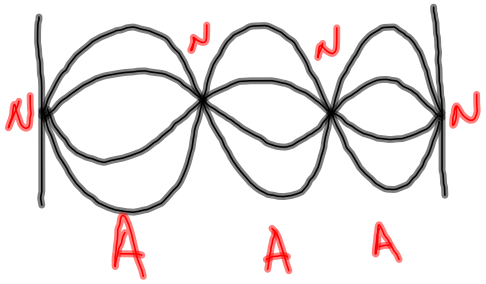
$\lambda_1 = 2L$



2nd order frequency

$f_2 = 2f_1$

$\lambda_2 = L$



3rd order frequency

$f_3 = 3f_1$

$\lambda_3 = \frac{2}{3}L$

HW: p. 387: 1, 2, 4